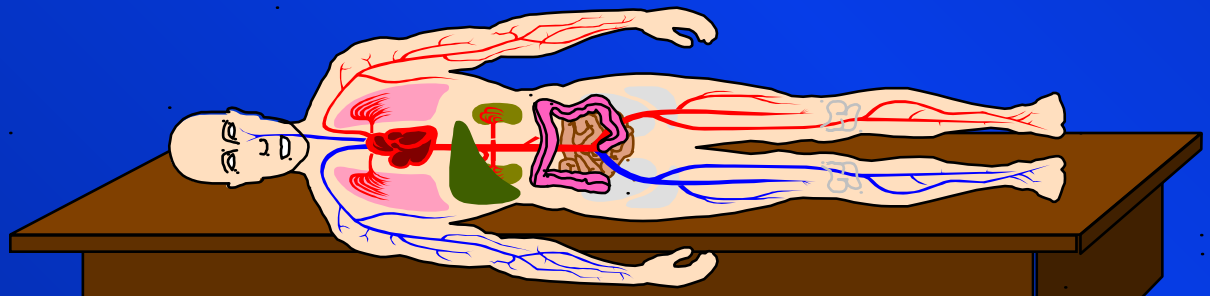
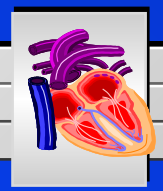
BLEEDING AND SHOCK

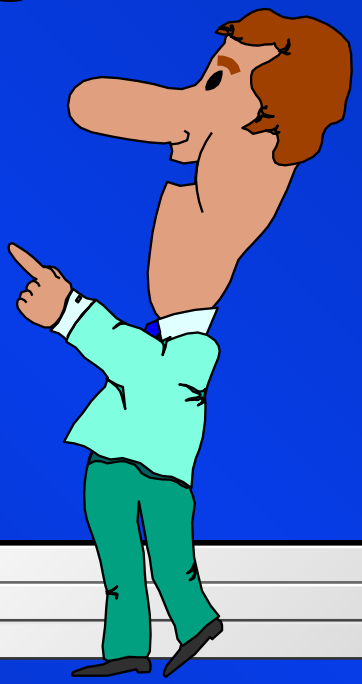
SSgt McFarland

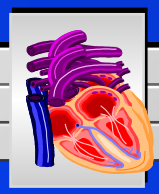




Bleeding and Shock

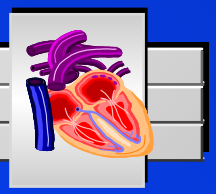
- **Lesson Objective: Identify the types of bleeding and shock and their treatments**





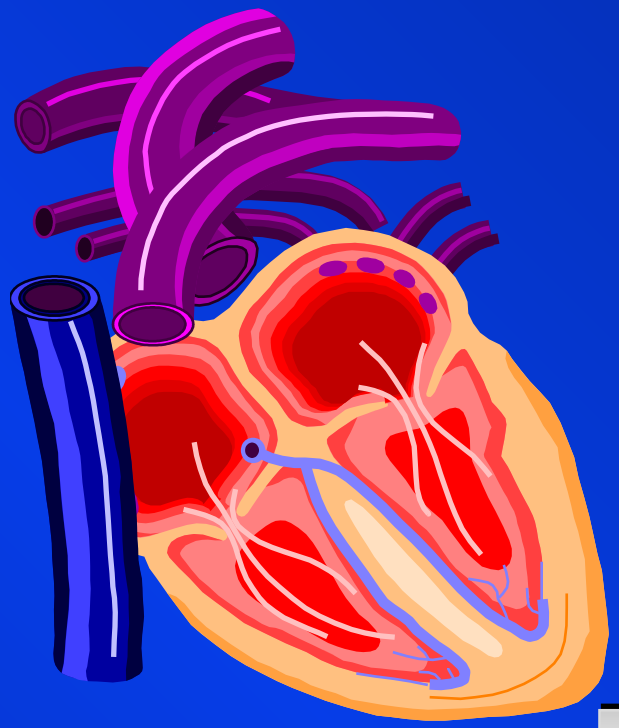
OVERVIEW

- Anatomy and Physiology
- External Bleeding
- Internal Bleeding
- Shock
- Types of Shock



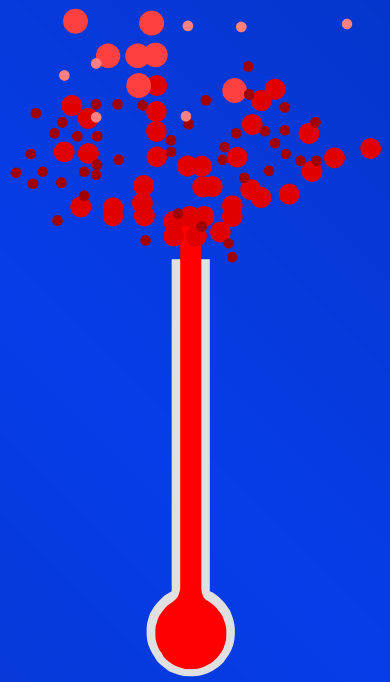
Anatomy and Physiology

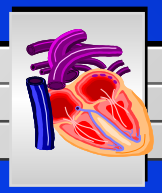
- Container
  - Heart
  - Arteries
  - Arterioles
  - Capillaries
  - Venules
  - Veins



Anatomy and Physiology

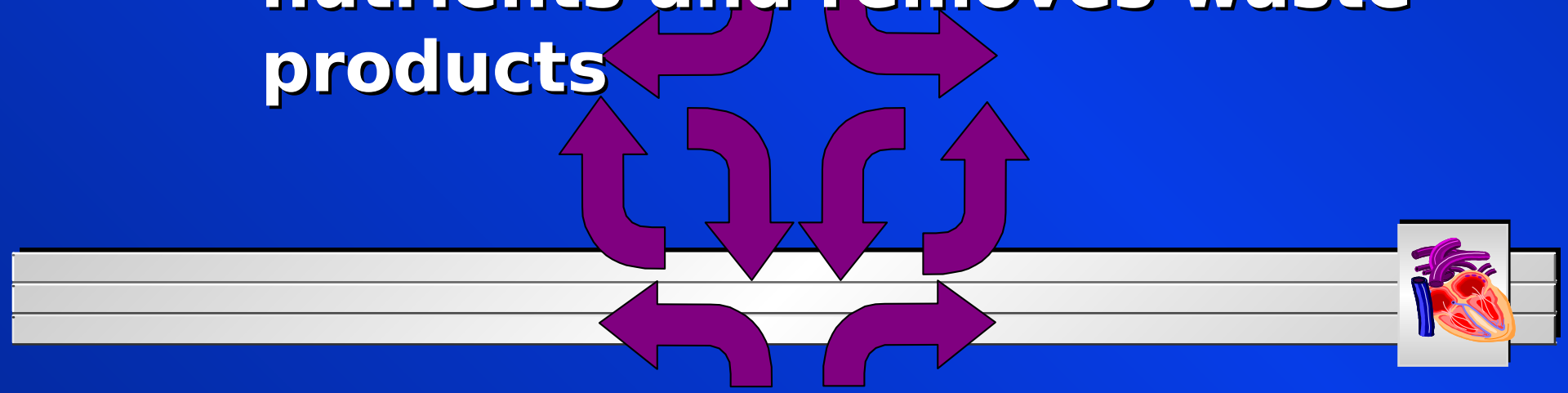
- Contents
  - Blood
  - Six liters

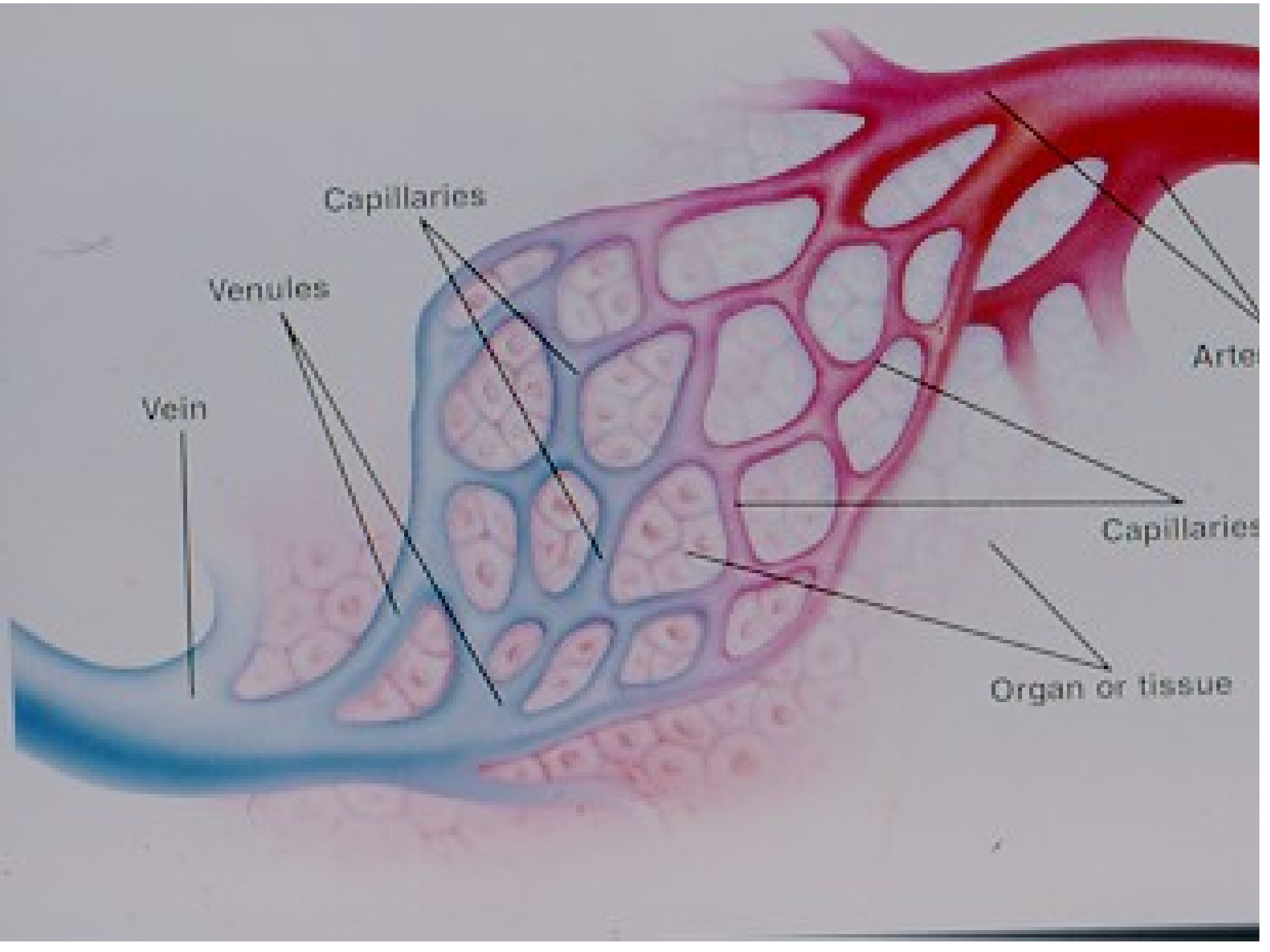




Anatomy Review

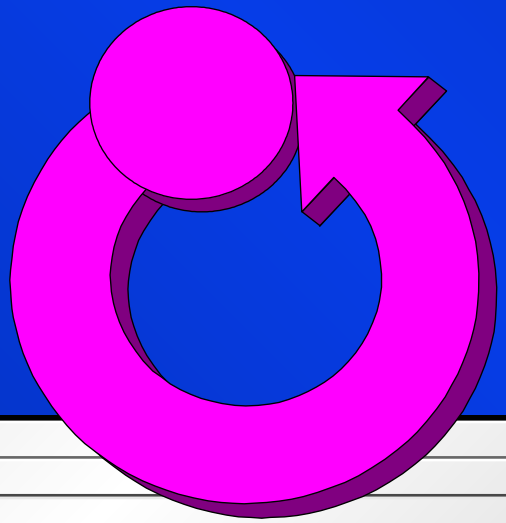
- **Perfusion**
  - Circulation of blood through an organ structure
  - Delivers oxygen and nutrients and removes waste products

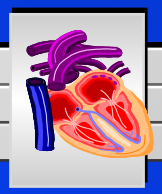



Capillaries
Venules
Vein
Capillaries
Organ or tissue

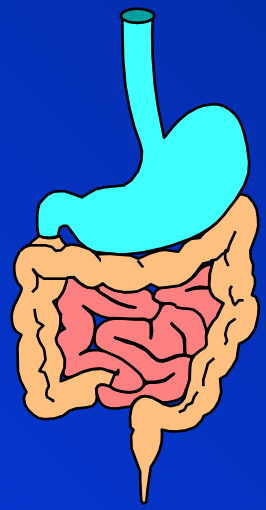
Jeopardy?

Inadequate circulation of blood through an organ



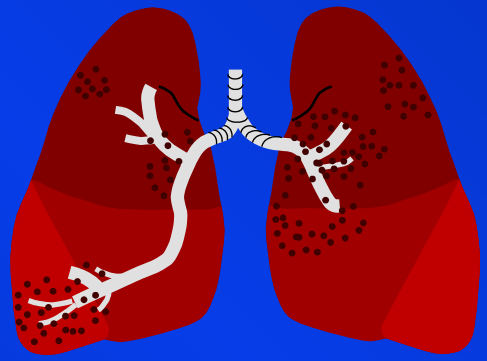


Hypoperfusion

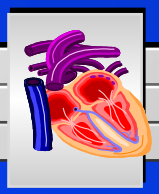


Organs susceptible

- Heart
- Brain and spinal cord
- Kidneys
- Skeletal muscle
- GI system



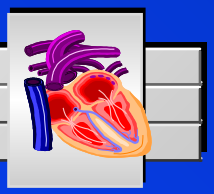
Inadequate perfusion results in shock



External Bleeding

EMT SAFETY

- **BSI**
- **Follow local protocol**

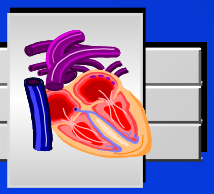


External Bleeding

Significant blood loss

- **1 liter - adult**
- **1/2 liter - child**
- **100 to 200 ml - infant**

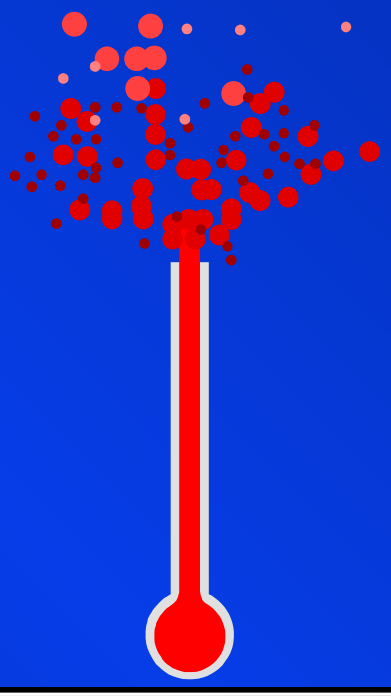
Result may be HYPOVOLEMIC shock

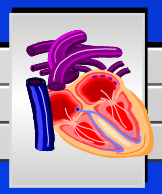


Types of Bleeding

Arterial

- Bright red and spurts
- Difficult to control





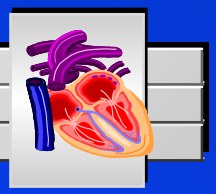
Types of Bleeding

Venous

- Darker and flows steady
- More easily managed

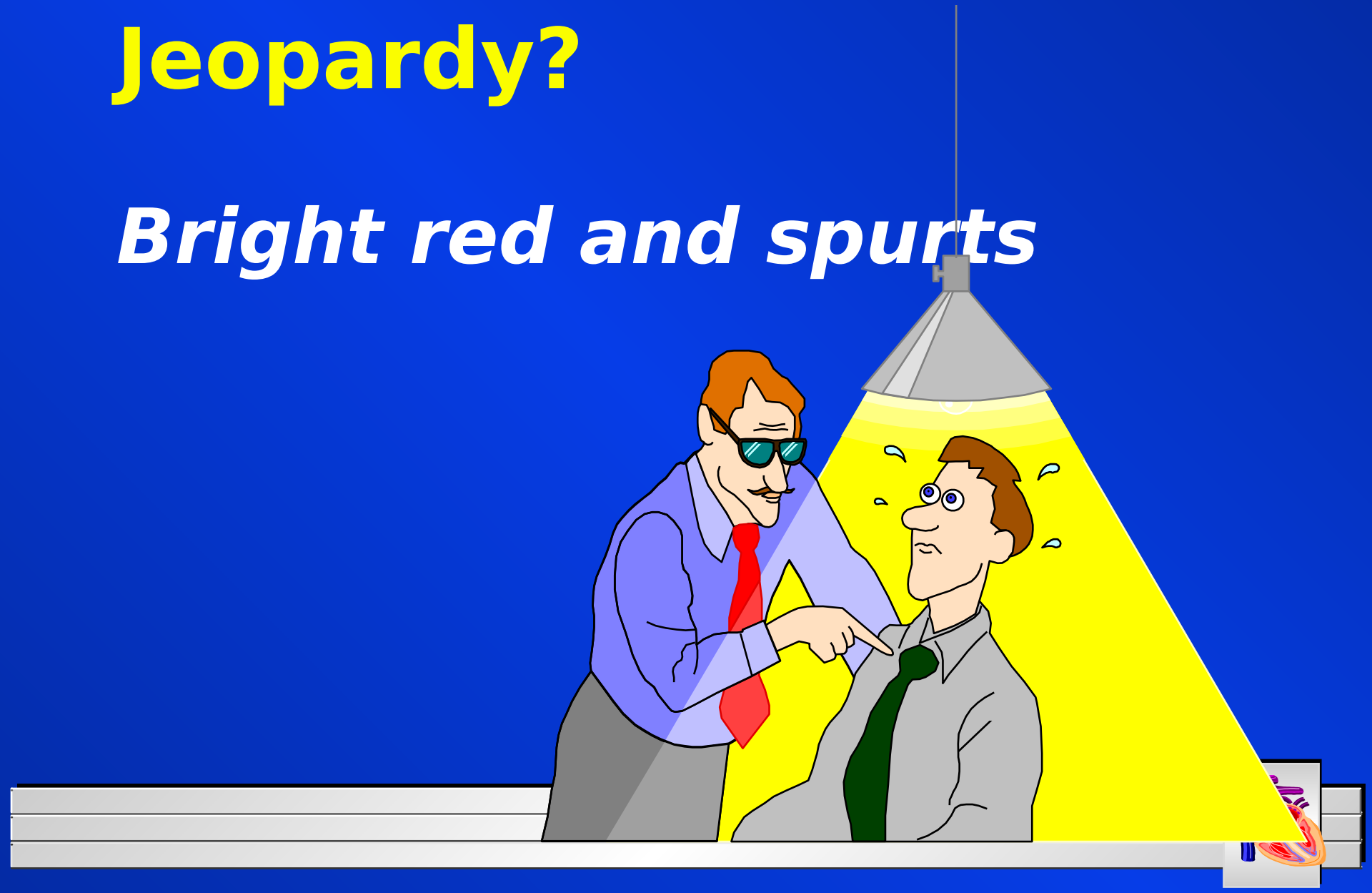
Capillary

- Dark red and oozes
- Often clots spontaneously



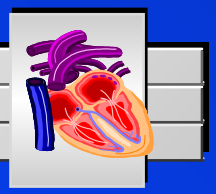
Jeopardy?

Bright red and spurts



Controlling External Bleeding

- BSI
- Airway / Breathing
- Bleeding Control



Bleeding Control

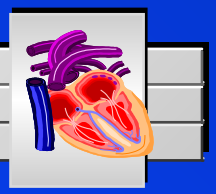
Direct local pressure

Most effectiv

Bleeding Control

Direct local pressure

- Pressure dressings
- Do not remove dressings
- Additional dressings



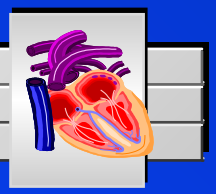
Bleeding Control

Elevation

- Use with direct pressure
- As little as 6”

Splints

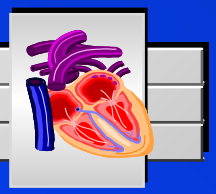
- Reduces motion of bone
- Control of bleeding



Bleeding Control

Air Splints

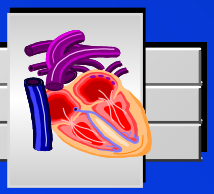
- Controls severe bleeding
- Stabilizes a fracture



Bleeding Control

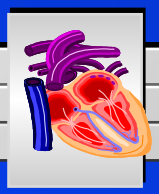
Pneumatic Antishock Garments

- Compresses abdomen and lower extremities
- Increases blood to vital organs



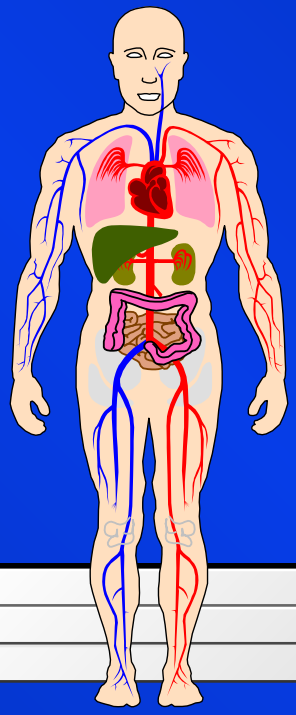
Jeopardy?

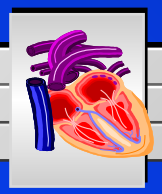
Blood is dark red and oozes



Bleeding Control

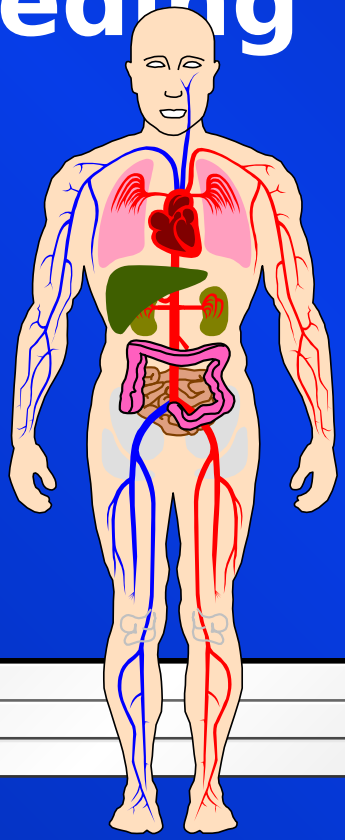
- **Proximal Arterial Pressure**
  - Rarely stops bleeding completely
  - Pulse points

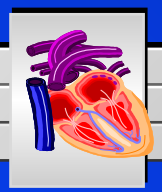




Jeopardy?

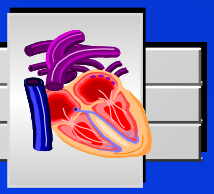
Most effective way to control bleeding





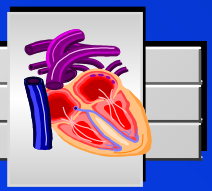
Tourniquet

- Last resort
- Can cause permanent damage
- Procedures
  - Bandage 4 inches wide and 6 to 8 layers deep
  - Wrap around extremity twice at a point proximal to bleeding but as distal on the extremity as possible

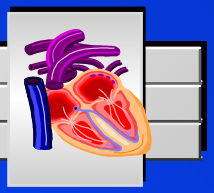


Tourniquet

- Tie a knot and insert stick
- Twist until bleeding stops
- Secure stick or rod in position
- Write TK and time applied on forehead
- Document use of tourniquet and time applied
- May use BP cuff



Precautions with the use of a Tourniquet



Precautions

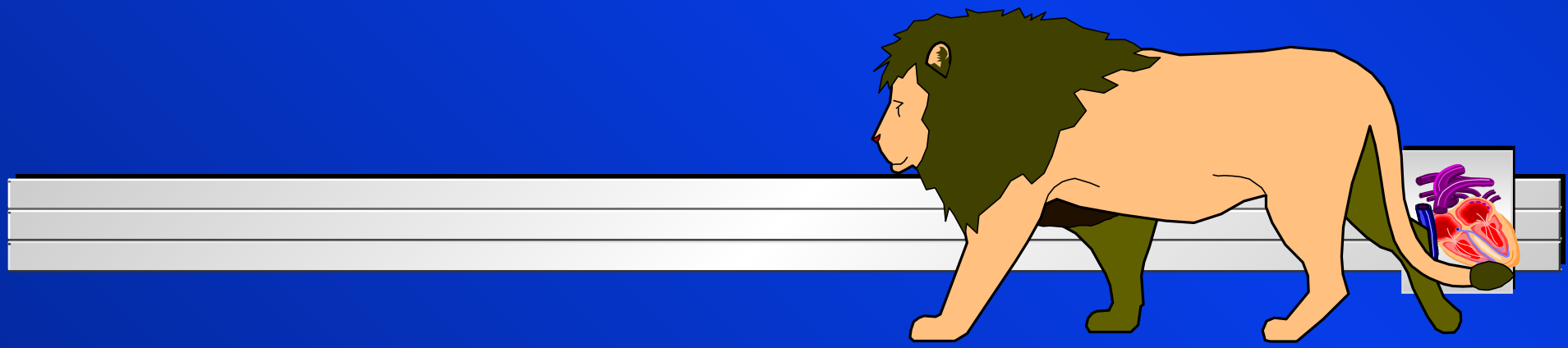
- Use a wide bandage and secure tightly
- Never use wire, rope, or belt
- Do not remove or loosen once applied
- Leave in open view
- Do not apply over joint

Special Areas - nose, ears, or mouth

- **Potential Causes**
  - Injured skull
  - Facial trauma
  - Digital trauma

Special Areas - nose, ears, or mouth

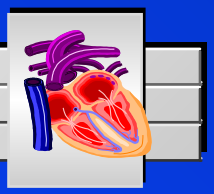
- **Potential Causes (cont.)**
  - **Sinusitis, or other URI infections**
  - **Hypertension**
  - **Coagulation disorders**



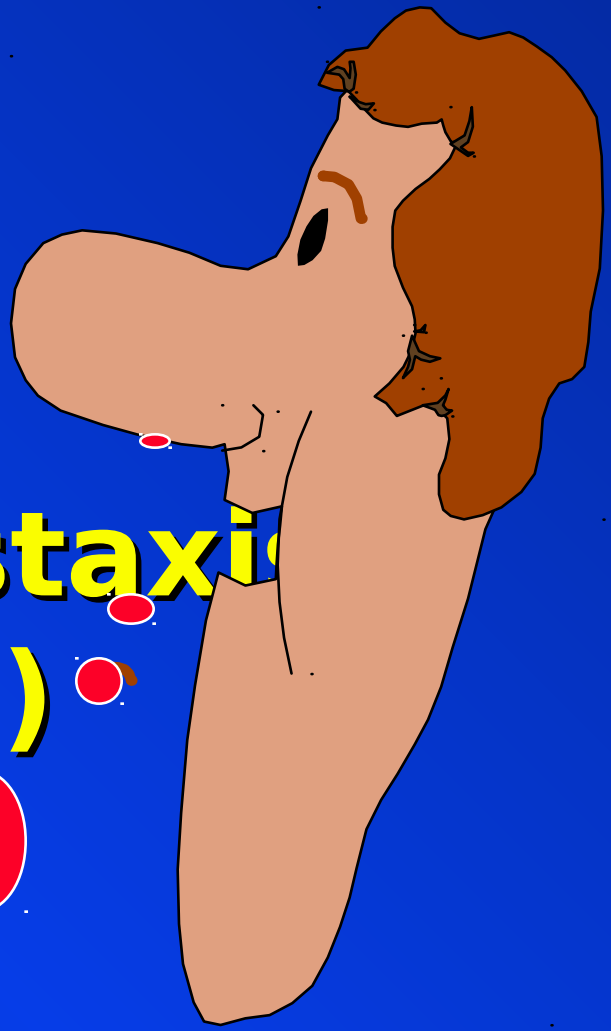
Treatment

Skull FX

- Do not stop blood flow
- Loose, dry sterile dressing
- Wrap dressing loosely around head

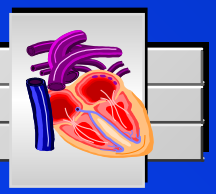


Treatment for epistaxis (nose bleed)



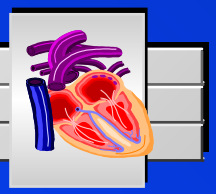
Treatment for epistaxis (nose bleed)

- Place in sitting position, leaning forward
- Apply direct pressure by pinching nostrils together, or
- Gauze between upper lip and gum
- Ice over nose
- Keep patient calm and quiet



Internal Bleeding

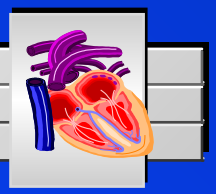
- **Severity**
  - **Hypovolemic shock**
  - **Bleeding may be concealed**



Internal Bleeding

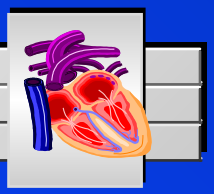
Severity

- Broken bones - serious internal bleeding
  - Local swelling
  - Bruising



Mechanism of Injury

- **Blunt trauma**
  - **Falls**
  - **Motorcycle crashes, pedestrian impacts, automobile collisions**

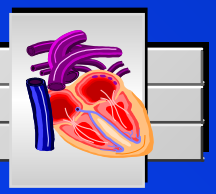


Mechanism of Injury

Blunt trauma cont…

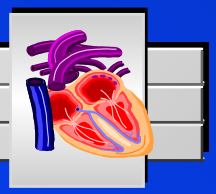
- Blast injuries
- Look for contusions, abrasions, deformity, impact marks, and swelling

- **Penetrating trauma**- Knife or gunshot



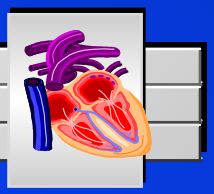
S & S of Internal Bleeding

- Pain, tenderness, swelling, or discoloration
- Bleeding from mouth, rectum, or vagina



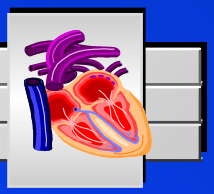
S & S of Internal Bleeding

- Hematuria
- Hematemesis
- Melena



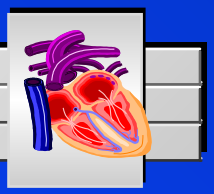
S&S Internal Bleeding

- Hemoptysis
- Pain, tenderness, bruising, or swelling around injured site



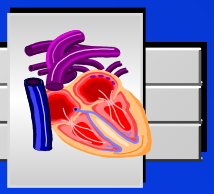
S&S Internal Bleeding

- Broken ribs, bruises over lower chest, tender, rigid, or distended abdomen
  - Lacerated spleen or liver
  - Referred pain



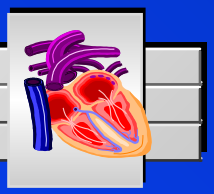
Late S & S of hypovolemic shock

- Anxiety, restlessness, combativeness, or altered mental status
- Weakness, faintness, or dizziness



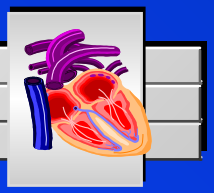
Late S & S of hypovolemic shock

- Thirst
- Shallow, rapid breathing
- Rapid weak pulse
- Pale, cool, clammy skin



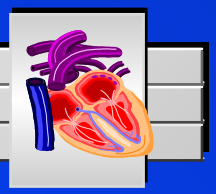
S & S of Hypovolemic Shock

- Capillary refill greater than 2 seconds
- Dropping blood pressure (late sign)
- Dilated pupils that are sluggish to respond
- Nausea and vomiting



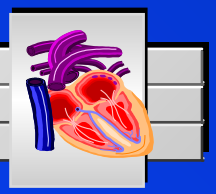
Treatment

- BSI
- Airway
- O2
- Treat internal and external bleeding
- Treat uncontrolled hypovolemic shock



Treatment

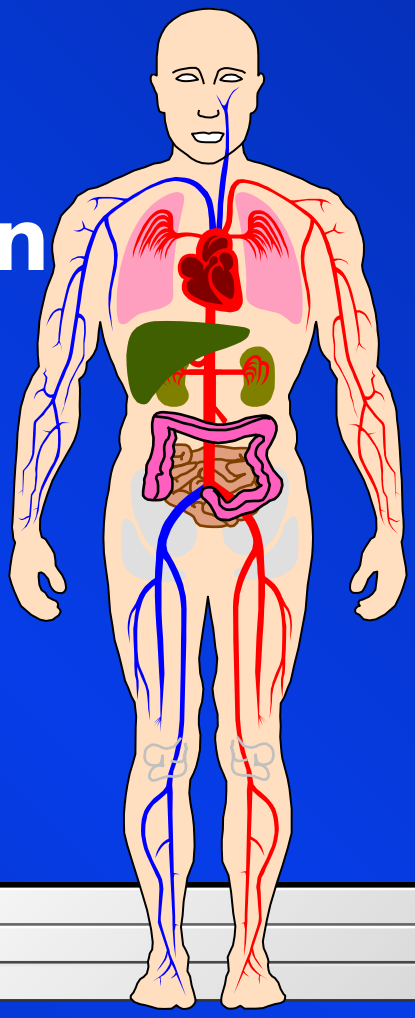
- Vitals at least every 10 minutes
- NPO
- Elevate legs
- Immediate Transport

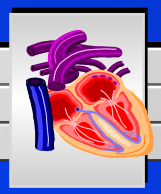


Shock (Hypoperfusion)

Physiology

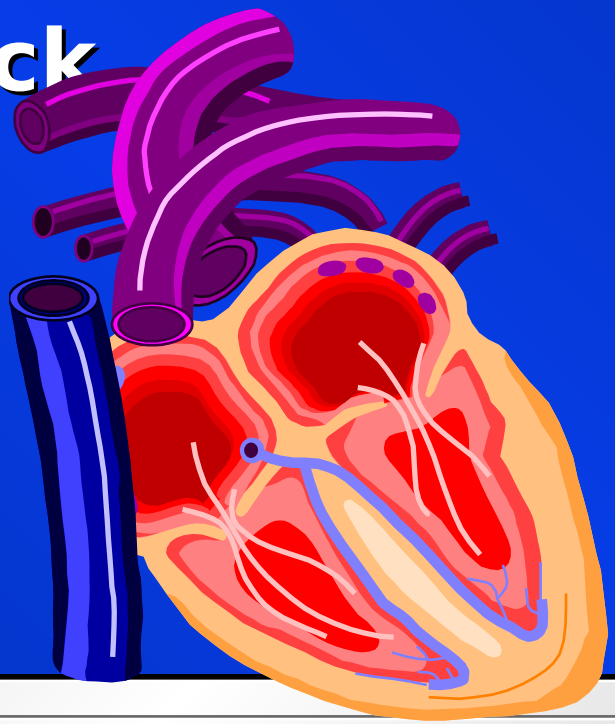
- Insufficient circulation
- Body redirects blood

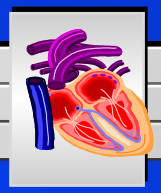




Causes of Hypoperfusion

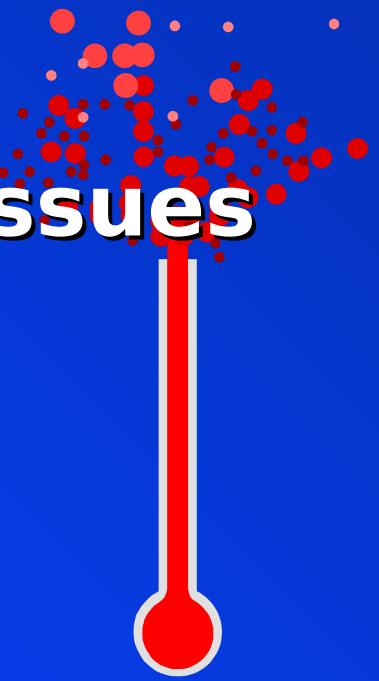
- **Poor pump function**
  - **Damage to the heart**
  - **Heart attack**

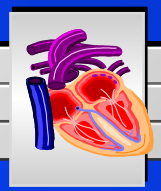




Causes of Hypoperfusion

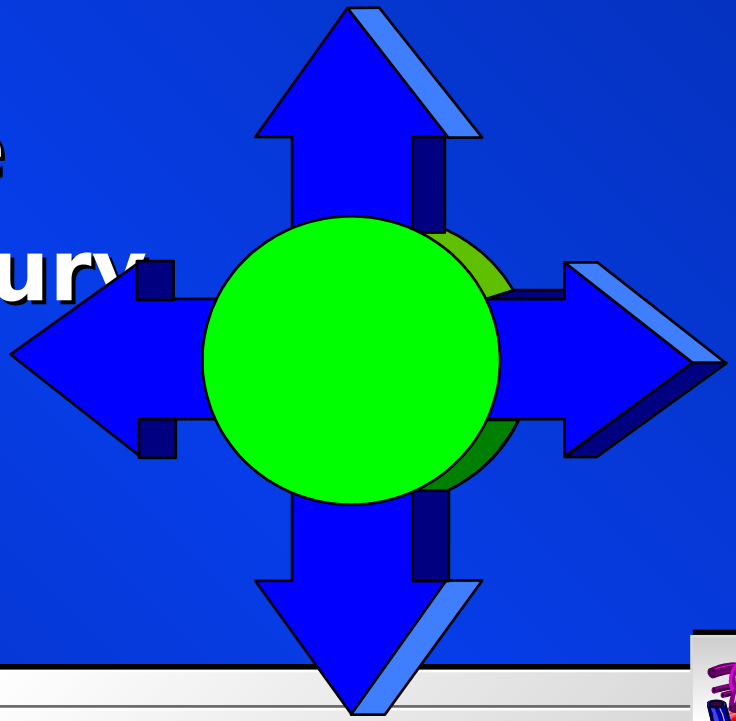
- **Blood or fluid loss from blood vessels**
  - **Trauma to vessels or tissues**
  - **Fluid loss from GI tract**

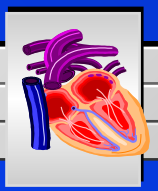




Causes of Hypoperfusion

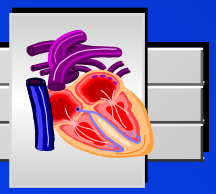
- **Blood vessels dilate**
  - Infection
  - Drug overdose
  - Spinal cord injury





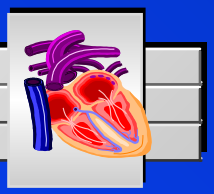
S&S early (compensated) shock

- Agitation, anxiety, restlessness, altered level of consciousness
- Weak, rapid (thready) pulse
- Pale, ashen, cool, moist (clammy) skin
- Pallor
- Profuse sweating



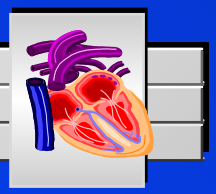
S&S of early (compensated) shock

- Shallow, labored, or irregular breathing
- Shortness of breath
- Nausea or vomiting
- Capillary refill longer than 2 seconds
- Marked thirst



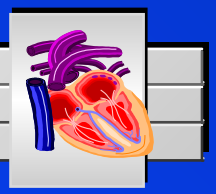
(decompensated) Shock

- Gradual and steadily falling blood pressure
- Poor urinary output
- Dull eyes, dilated pupils
- Weak or absent peripheral pulses



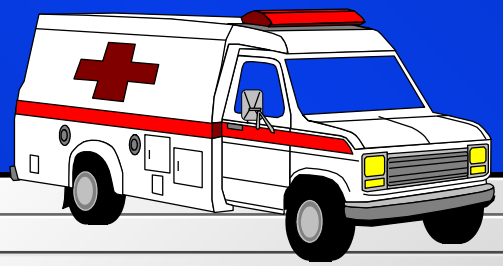
Emergency Medical Care

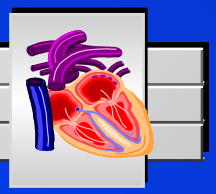
- BSI
- Airway
- Control external bleeding
- Elevate lower extremities 6 to 12 inches



Emergency Medical Care

- Splint any bone or joint injuries
- NPO
- Prevent loss of body heat
- monitor vital signs
- Transport

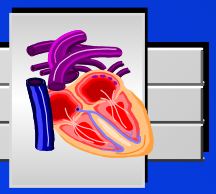




Types of Shock

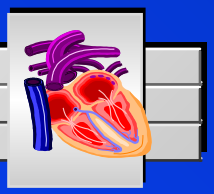
- **Anaphylactic** -

  Most severe form of allergic reaction due to vascular dilation



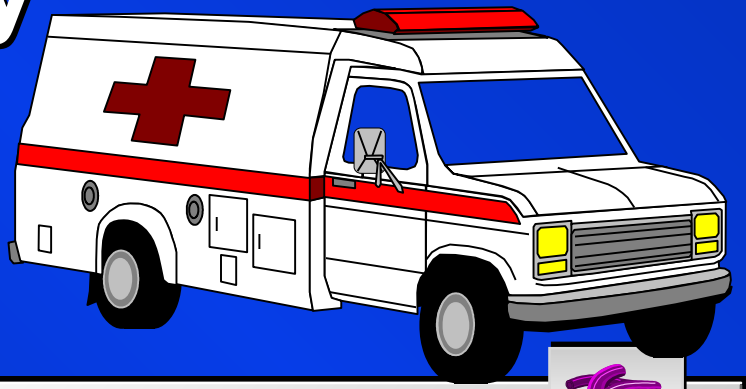
Types of Shock

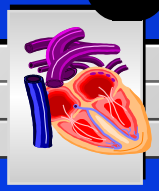
- **Anaphylactic -**
  - **S & S**
    - **Mild itching**
    - **Burning skin**
    - **Generalized edema**
    - **Coma**
    - **Rapid death**



Treatment

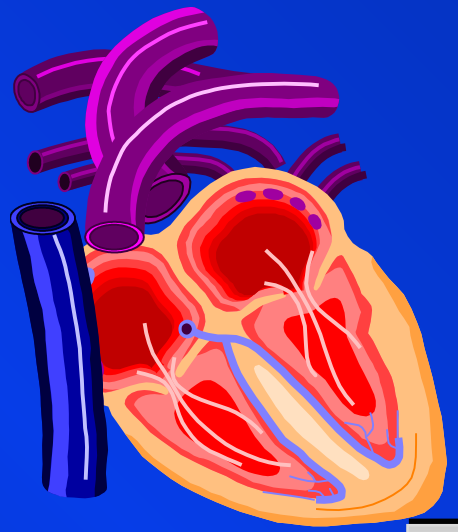
- O2
- Determine cause
- Epinephrine
- Transport promptly

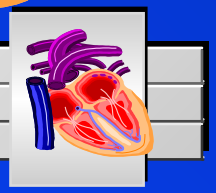




Types of Shock

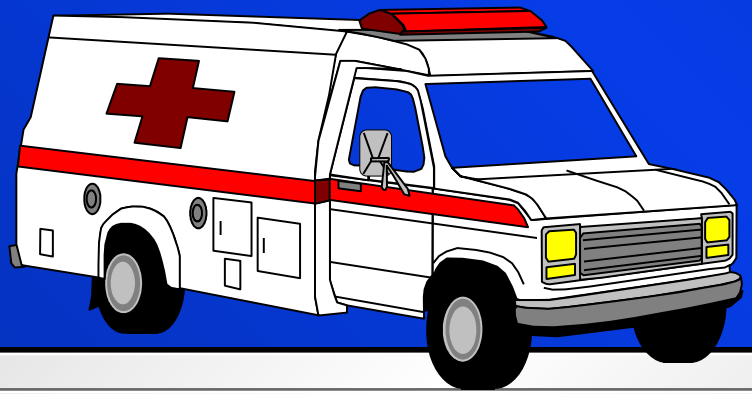
- **Cardiogenic** - poor pump function
  - S&S
    - Chest pains
    - Irregular, weak pulse
    - Low blood pressure
    - Cyanosis (lips, nails)
    - Anxiety





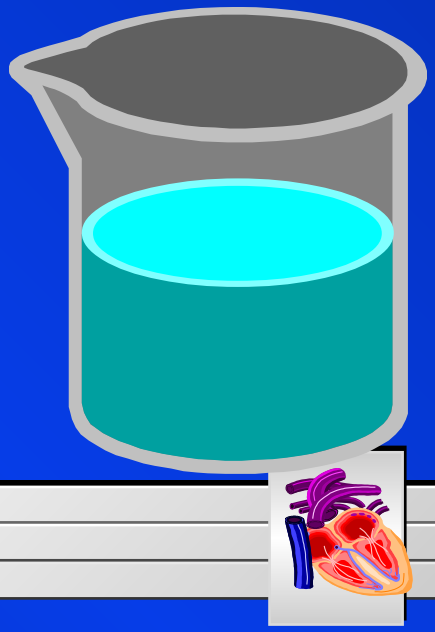
Treatment

- Position
- O2
- Transport promptly



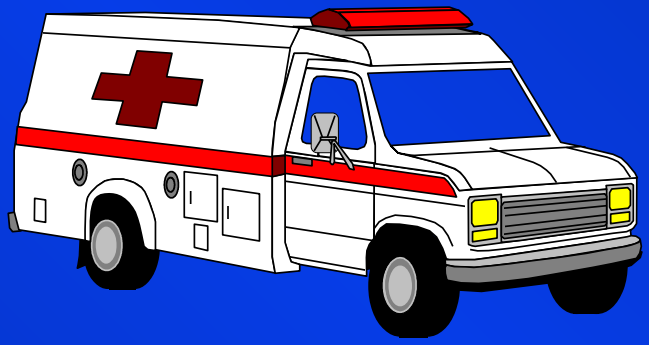
Types of Shock

- **Hypovolemic** - Loss of blood or fluid
  - S&S
    - Rapid, weak pulse
    - Low blood pressure
    - Change in mental status
    - Cyanosis (lips, nails)
    - Cool, clammy skin



Treatment

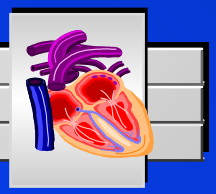
- O2
- Control external bleeding
- Elevate legs
- PASG
- Transport



Types of Shock

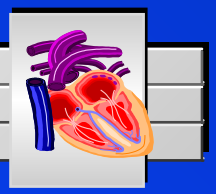
- **Metabolic-**

  Excessive loss of fluid and electrolytes



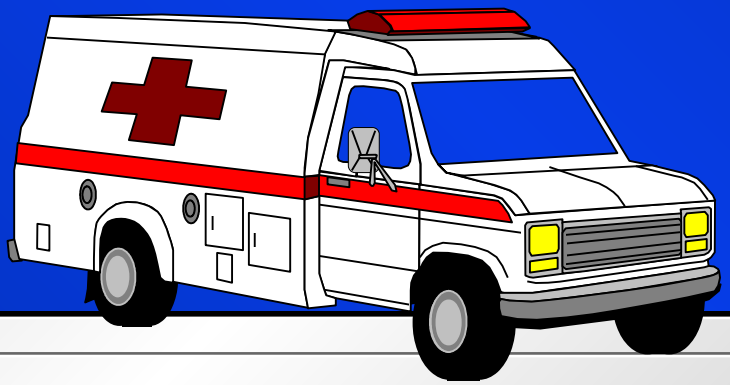
Types of Shock

- **Metabolic** -
  - S&S
    - Rapid, weak pulse
    - Low blood pressure
    - Change in mental status
    - Cyanosis (lips, nails)
    - Cool, clammy skin



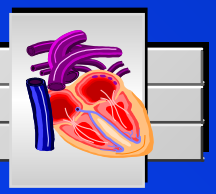
Treatment

- O2
- Determine illness
- Transport promptly



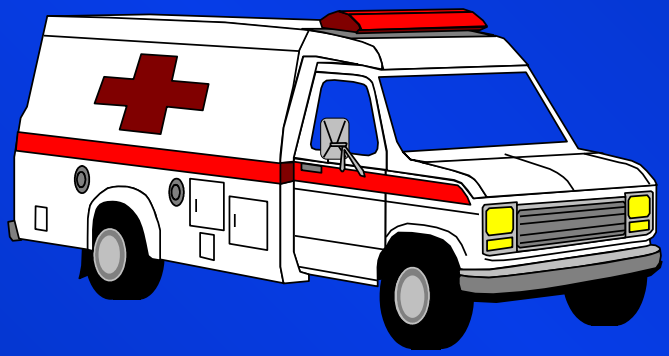
Types of Shock

- **Neurogenic** - Damaged cervical spine, causing blood vessels to dilate
  - S&S
    - Bradycardia
    - Low blood pressure
    - Signs of neck injury



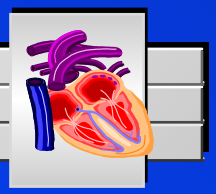
Treatment

- O2
- Conserve body heat
- PASG
- Transport



Jeopardy?

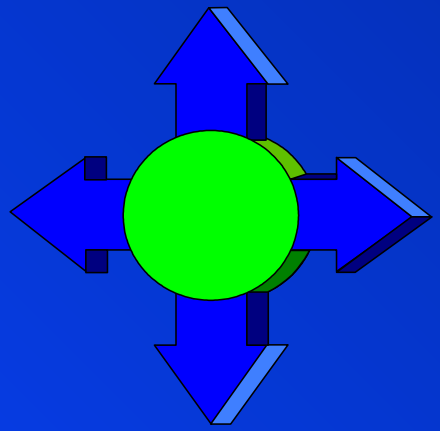
- Temporary vascular dilation, due to anxiety, sight of blood, severe pain, etc.

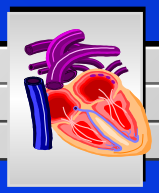


Types of Shock

Psychogenic S&S

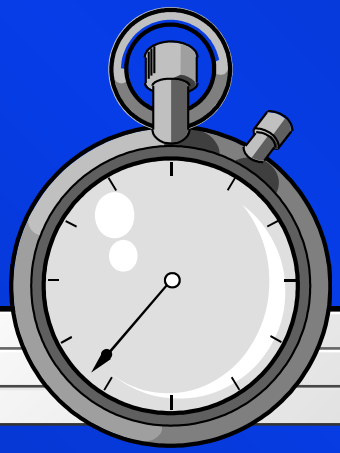
- Rapid pulse
- Normal or low blood pressure

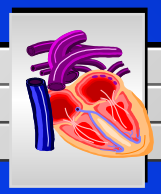




Treatment

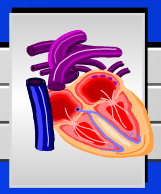
- Duration of unconsciousness
- Record vital signs and mental status
- If confused, suspect head injury
- Transport





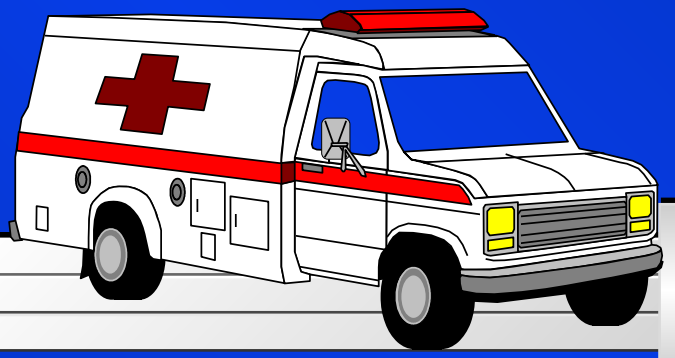
Types of Shock

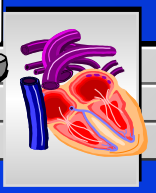
- **Septic** - combined vessel and fluid loss due to severe bacterial infections
  - S&S
    - Warm skin
    - Tachycardia
    - Low B/P



TX

- O2
- Elevate legs
- Keep patient warm
- Transport promptly





Summary

- Anatomy and Physiology
- External Bleeding
- Internal Bleeding
- Shock
- Types of Shock

QUESTIONS?